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may be gathered, and permanently useful methods may be evolved. It is curious to note that only the *names* of some things are new; as (for instance), the *term* "bridge-work," though heading a long and elaborate chapter in this edition, is not to be found in previous ones: but the *idea* itself is well described in former issues, less elaborated, among "partial dentures," &c.

In this class of work the "operative," or almost purely surgical, and the "mechanical" are often inseparable; and so much space is devoted to it that we are surprised at the total omission of reference to regulating devices, though the mechanical treatment of palatal defects is considered at length. But for the fullest information on all subjects treated, we should consider this valuable compilation indispensable.

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MINOR NOTICES AND CRITICAL ABSTRACTS.

Address delivered at the Pathological Society of London.

On Tuesday, January 18th.

BY SIR JAMES PAGET, BART., F.R.S.,
PRESIDENT OF THE SOCIETY.

GENTLEMEN,—I thank you heartily for the honour you have conferred on me by electing me to be your president. It is a great compliment that I should still be thought fit to be president of a Society of which the most active members are much younger scientific men, some of whom are studying pathology in subjects and with methods almost unknown to me. If I can be at all fit for the office, it may be because, in my very imperfect knowledge of many of the numerous methods in which pathology is now studied, I can look with full respect upon them all; and, indeed, there are few things in relation to our science of which I am more sure than of this, that every possible method of studying it should be by all possible means promoted. And while I am your president this shall be my object, so far as I may have power.

I hope I shall not prove myself unwise if I do not take for the subject of my address that kind of knowledge in which alone I might claim superiority over my hearers—namely, the personal memories of the far distant past. It would be very pleasant to me to tell some of them, and might be amusing and flattering tory chapter the author elevates the tone of his work by a modest but dignified vindication of the professional aspect of the "mechanical" part of dental practice. He says, "In this special field of humane endeavour the highest order of qualification is imperatively demanded for the complete fulfilment of its diversified and complex requirements. No one can be said to be properly equipped for its duties, who has not a more or less familiar acquaintance with such of the several branches of physics as relate in any manner to his special work, while an exact knowledge of the anatomy, physiology and pathology of the tissues or structures in any way related to the substitute, is absolutely indispensable. Added to such qualifications is the essential requirement of the highest order of manipulative skill."

These not untimely considerations Dr. Richardson supplements by some admirably conceived observations on the undoubtedly pressing claims of the necessitous afflicted to adequate, but inexpensive relief, and the profession's resources in providing unobjectionable, if possible artistic—and not too costly forms of substitution. The consequent obligation to make the best and highest use of the so-called cheap methods and perhaps inferior forms of replacement is discussed with large and just discrimination.

In deploring that the facility of construction afforded by the simple methods and materials has attracted to the profession a mercenary and unscrupulous class, ignorant or regardless of all æsthetic requirements, the author thinks "the responsibility for the continuance of this evil will rest largely with the profession itself." It is therefore cheering to learn that in the United States, according to the opinion of so eminent an American, "there is reasonable assurance that the era of irresponsible quackery is fast passing away." After referring to the Colleges and Examining Boards, he says, "A faithful execution of the trust reposed in these bodies will go far to redeem prosthetic practice from the undeserved reproach brought upon it by a prostitution of its legitimate resources, wholly unworthy of toleration and utterly destructive of all sense of professional self-respect."

Of the technical novelties added to the book it is impossible to speak critically, when so large a field is covered in such detail. Whole, new and extensive chapters are devoted to "crown" and "bridge-work," with most astonishing complications and fearfully wonderful constructions; from which, however, suggestive ideas to those who can compare the best modern knowledge with that which it has displaced. But it may be more useful to think and speak of what may next be done, and how to do it. For every increase of knowledge brings before us a larger and clearer view of the immeasureable quantity which is still to be gained. The more we know, the more can we see, if we will, how much more there is that we do not know.

I wish I could indicate all or many of the ways in which new knowledge is to be gained; but I cannot. It is characteristic of modern pathology that, as it certainly surpasses all other sciences in the variety and complexity of its problems, so it offers work sufficient for the employment of nearly every variety and opportunity of the scientific mind. Pathology, as distinguished from practical medicine, used to be regarded as scarcely more than morbid anatomy; but now there is in it work not only for the anatomist and physiologist, but for the clinical observer, the experimentalist, the minutest microscopist, the statistician, the chemist, the naturalist, the historian, the psychologist and yet more. I cannot pretend to be all these; and I will not pretend to decide who has done the best work or is most likely to do it in the future. Only, it is certain that complete pathology must be constructed from the works of all these; they are all mutually dependent, mutually corrective; none can alone suffice, and none can safely be neglected.

But of all the methods of study, there are only two with which I have been much occupied — those, namely, of pathological anatomy and of clinical pathology in active practice. I can therefore speak of the future employment of only these two. But I will hope they may suffice, especially as the greater part of the members of the Society are engaged in them, and because we may justly believe that practice and pathological anatomy, if they be studied with the scientific mind and methods, will still contribute largely to the progress of the whole science of pathology.

I say practice studied with the scientific mind, because practice is often spoken of as if it were altogether distinct from science and inconsistent with it. We hear science and practice spoken of as in opposition, and sometimes as if they were mutually distrustful. I will not deny that strange contrasts of the practical and the scientific may be found among us; but these contrasts are constantly becoming more rare, and it is an excellent influence of this Society that it tends to cultivate the scientific mind and to maintain it in the practical life. For what practice may be depends in all respects, much more on the person engaged in it than on its own subject-matter. It may be for one a noble profession, for another a vile trade; and in equal contrast it may be a mere useful art practised by one who has neither love nor knowledge of any science, or to the man of scientific mind it may be a thoroughly scientific study as well as an applied science. I could name many living in active practice of whose work a great part is as definitely scientific as is that done in any other section of biology. And so are the works of many who are gone. For example, I know no reasonable definition of science which would exclude the researches by which Bright attained the knowledge of the disease which bears his name; or which, in a just history of pathology, would separate, as if they were of different merits, the clinical and the experimental researches from which we have our knowledge of the diseases of arteries and veins. Surely, it would be hard to name a discovery in biology which more deserves the name of scientific than does Jenner's discovery of vaccination; and yet it was made in the plainest practical manner while he was a country practitioner. But observe, Jenner was a thorough naturalist, trained by John Hunter; and I suspect it will be found that all the best advances in clinical pathology, the best not only in their utility but in their fitness for adjustment among the largest principles of our science, have been made by practitioners who were either by nature or by cultivation men of scientific mind. And it is as sure as anything of the kind can be that similar studies by men of similar mind will still attain as good results.

Practice is full of opportunities for science. Let me suggest only one group of them. Reflection on any day's work in practice may convince us that we have been using a good deal of knowledge or belief which we cannot explain by its relation with other knowledge, whether in pathology or any other branch of science. We may have given what are called specific medicines, or have advised some one in the belief that he was predisposed to some disease, or may have talked of functional diseases. Yet I doubt whether in any of these things there are more than unexplained facts; and if there are not, then we may be sure that the facts are very hopeful beginnings for scientific study by those engaged in practice. I may illustrate this by the example of the use of some of the specific medicines, such as that of quinine in malarial diseases, of mercury and of iodide of potassium in syphilis, of arsenic in many cases of psoriasis, or of bromide of potassium in some cases of epilepsy. Here are sure facts, practical and useful, as sure as anything in therapeutics. I would not call them scientific, for, so far as I know, they are isolated facts, and separate from what may be called general laws in biology. They are, indeed, the chief of those facts which, in some minds, bring our clinical pathology into discredit; for, being only useful and not scientific, they are cited as examples of unscientific practice. They are called empirical, and the empiric is deemed equivalent with the quack. Let me say, as in parenthesis, that I think we have here an example of the common fate of words in our language—that if a word acquires a discreditable meaning, its better meaning is gradually lost, and only the worse remains with it. For the empiric and the experimentalist are, I think, synonymous; and yet in pathology the one, having a degraded name, is now deemed a hopeless hindrance to progress, and the other is its hero.

But, however this may be, among these empirical facts modern scientific work in practice may win great riches for pathology. For the medicines I have named are not only remedies, but diagnostic tests; they prove differences among diseased conditions that in other things appear alike. The epilepsy which is averted by the habitual use of bromide of potassium cannot depend on the very same conditions as that which is not so averted; the ulcer which heals under the influence of mercury cannot be of the same kind as that which looks like it but does not so heal. Thus, as we all know, these medicines are tests; and we may guess that each of them detects the presence of some material belonging only to the disease which it cures. Here, then, is work for the scientific practitioner; he may find the material and more, if he will observe the facts in practice much more minutely, and record and collect them, and bring to bear on them as much light as possible from other sections of pathological science. They will yield more knowledge, and his practice will be promoted to a better title than "empirical."

Let me again refer to some facts which I have already mentioned, and which are now accepted in the largest principles of pathology. I remember that during my apprenticeship, more than fifty years ago, in a post-mortem examination of one who had died with dropsy, a young Guy's man cut across one of th kidneys, and said, "Dr. Bright, of Guy's, says there is a form o dropsy which is always associated with disease of the kidneys. This was accepted by the practitioners standing by as a singula fact, and nothing more. I should find it difficult to tell now int what, with fifty years of scientific culture, that singular fact ha grown. Or, again, could any fact stand more alone than did tha of the use of vaccination as first observed by Jenner? And no it may be honoured as the first knowledge attained in all that wid range of pathology in which Pasteur's great work has been done and to which Power and Klein have lately annexed their admi able discovery of the true source of the milk scarlatina.

There are many more of this group of the facts of which w have better knowledge in practice than we have in morbi anatomy or any other section of pathology. We are sure, fo instance, that there are certain conditions which are justly calle predispositions to disease; but in what many of these consist w are, I suppose, quite ignorant. There are diseases or disorder which we must be content to call functional, though I suppos none of us would hold that there can be any change in the working of a part without a change in its structure or composition We know that certain disorders, such as typhoid and scarle fever, are apt to be followed by certain other disorders, which w call their sequels; but we have not yet shown the changes o which the sequence is a necessary consequence. We know tha different morbid conditions may be combined, as in disease which we may call hybrid or mongrel; we can recognise man of these combinations during life; they are things to be "attende to," as we say, in treating cases; but of the allied varieties o morbid changes of structure or composition, and of the lesson they would teach, we know, I think, at present very little.

How may these defects be remedied? Surely, the best wa will be by studying and minute scientific work in practice. I sa emphatically minute work, for I think it can be proved by th example of other sciences that the more minute the inquiries an the facts obtained by them, the more sure and complete will th fusion of pathology become with the whole body of biologica science, and the more will it thence gain.

Now, these more minute investigations may be made not onl in the records of clinical observation, which may be far more minut than they are now, but, I venture to think, even in microscopi examinations, especially if these be made whenever it is possible on the living as well as on the dead morbid structures. I would not, in any degree, depreciate the value of the knowledge gained by examining the well-defined structures which are shown in microscopic specimens prepared with hardening and staining and other fixing processes. They ensure a more exact diagnosis, and hey may be studied deliberately and with comparison; but while they have all the value, they have also some of the defects, of botanical specimens dried and flattened in an herbarium. These are essential to accuracy in descriptive botany, and to the diagnosis of species and varieties, but the vegetable physiologists must tudy living things. The herbarium tells little of the true plant-ife, and of many processes in which that life is expressed, such s the minute intra-cellular movements and others of the like kind. Things of this kind, and important differences among them, may be found if the method of examining still living tissues can be mproved, and if it be the rule to examine each morbid growth or roduct both directly after its removal from the living body while t may be deemed still alive, and after it has been prepared for epeated examining by staining or other like processes. I venture o expect that by methods such as these, and with improving microscopic power, the sight may often reach far beyond the oundary of what as yet been seen, and will detect differences of tructure or of movement in what we are at present obliged to call tructureless. And, even beyond this, I would hope that the microscope, with microscopic chemical tests, will detect differences which must be referred to differences of composition rather than f anything that can be called structure, and yet not less decisive f distinctive properties.

But I will not go on thus hoping, and perhaps only guessing. et me only add one warning suggested by that word "structure-ess." It suggests the recollection that we are all apt at times to ubmit to the fascination of promises of finality; to find comfort n believing that we have really reached a boundary: that some-hing is really structureless: or that there is a protoplasm which the same always and everywhere, at least in the same species; that in apparently similar substances there may be differences potentiality; as if in things material there could be differences power or property without differences of structure or of com-osition. We should get rid of these idle-making fallacies. The rotoplasm in every structure, or of every embryo, must be as essentially different from that of every other as is the structure or the creature which in due time it may become; and these differences will be discovered by our successors if we—I mean you—do not discover them. And for one caution more. Let us never be content with present utility. Glad of it we may well be, and even proud, for science cannot be degraded by being useful in good things, and I suppose that of all utilities none can minister more happiness to those who most need it than ours may: but we must not be content with it as it is: it will be increased by every increase of our real knowledge.

Let me, before I end, again express my regret that I have been obliged to limit myself thus narrowly in speaking of pathology. Let me repeat that it is only because I have too little knowledge of other methods of study to speak of them definitely or even safely. But I earnestly hope that in our meetings we shall have contributions from them all, for all are essential to the progress of our science, and it will be a singular pleasure to me if, in my office as president, I can promote them. To do so will make my office very happy and very useful to me in helping me to avert that sad defect of old age, the indifference or dislike to the changes which come of the increase of knowledge. One sees that, as men grow old and wish for rest, they are prone to ask, Where are we to stop? I do not know more than this: that we must not stop where we are: we must go on and on, and we may be sure that they who work to find the truth will not work in vain—sure that with true work true good will come. So I will hope that it may be here during my presidency. —*Lancet.*

NEW INVENTIONS.

The Bright Platinum Plating Company.

We have had submitted to us some specimens of a new method of preserving instruments from the effects of rust, which appears to us in every way satisfactory. The Bright Platinum Plating Company, 27, Clement's Lane, E.C., are introducing this method which consists in coating the instrument with platinum, the result being that the instrument is rendered absolutely impervious to rust, and has always an appearance of brightness, not so bright or white as nickel, but something between that and steel. The extreme

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